Faculty of Cognitive Sciences and Human Development

A STUDY OF RELATIONSHIP BETWEEN SELF-CONCEPT, PARENTS' EDUCATIONAL BACKGROUND, AND SCHOOL CLIMATE WITH FORM 4 STUDENTS' MATHEMATICS ACHIEVEMENT

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A STUDY OF RELATIONSHIP BETWEEN SELF-CONCEPT, PARENTS' EDUCATIONAL BACKGROUND, AND SCHOOL CLIMATE WITH FORM 4 STUDENTS' MATHEMATICS ACHIEVEMENT.

KUEH BIP LE

This project is submitted in partial fulfillment of the requirements for a
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The project entitled 'A Study Of Relationship Between Self-Concept, Parents' Educational Background, And School Climate With Form 4 Students' Mathematics Achievement' was prepared by Kueh Bip Le and submitted to the Faculty of Cognitive Sciences and Human Development in partial fulfillment of the requirement for a Bachelor of Education (Mathematics) with Honours

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Statement of Originality

The work described in this Final Year Project, entitled
"**A Study Of Relationship Between Self-Concept, Parents' Educational Background, And School Climate With Form 4 Students' Mathematics Achievement**"
is to the best of the author's knowledge that of the author except
where due reference is made.

_____ _____

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15848

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ABSTRAK

KAJIAN TENTANG HUBUNGAN ANTARA KONSEP KENDIRI, LATAR BELAKANG PENDIDIKAN IBU BAPA, SUASANA SEKOLAH DENGAN PENCAPAIAN MATEMATIK PELAJAR-PELAJAR TINGKATAN 4

Kueh Bip Le

Kajian ini bertujuan untuk mengkaji hubungan antara pencapaian matematik pelajar-pelajar tingkatan 4 dengan faktor-faktor seperti konsep kendiri, latar belakang pendidikan ibu bapa, suasana sekolah. Kajian ini dijalankan secara quantitatif dengan menggunakan rekabentuk korelatif. Kajian ini telah dijalankan di sebuah sekolah di Sibu. Peserta-peserta dalam kajian ini terdiri daripada 161 orang pelajar tingkatan 4. Borang soal selidik telah digunakan sebagai alat untuk menggumpul maklumat dalam kajian ini. Kemudian, data yang dikumpulkan daripada borang soal selidik itu dianalisis secara quantitatif dengan menggunakan perisian 'Statistical Package for Social Science' versi 14.0 (SPSS 14). Nilai 'Cronbach Alpha' menunjukkan boring soal selidik itu mempunyai kebolehpercayaan yang tinggi iaitu melebihi nilai 0.7. Frekuensi statistic diskritif dan Korelasi Pearson digunakan untuk mendapat frekuensi, peratusan, min, sisihan piawai dan pekali korelasi bagi pemboleh ubah bergantung dan pemboleh ubah tidak bergantung. Keputusan kajian ini menunjukkan bahawa konsep kendiri ($p < 0.01$, $r = 0.609$) dan suasana sekolah ($p < 0.01$, $r = 0.431$) mempunyai hubungan yang positif dan signifikan dengan pencapaian matematik pelajar-pelajar tingkatan empat manakala latar belakang pendidikan ibu bapa tidak mempunyai hubungan yang signifikan dengan pencapaian matematik pelajar-pelajar tingkatan empat ($p = 0.17$, $r = 0.111$). Akhirnya, keputusan kajian ini dibincangkan berdasarkan objektif kajian ini.

ABSTRACT

A STUDY OF RELATIONSHIP BETWEEN SELF-CONCEPT, PARENTS' EDUCATIONAL BACKGROUND, AND SCHOOL CLIMATE WITH FORM 4 STUDNETS'S MATHEMATICS ACHIEVEMENT

Kueh Bip Le

This study aims to investigate the relationship between Mathematics achievement of Form 4 students with factors of self-concept, educational level of parents and school climate. This study was conducted quantitatively by using correlational research design. The study was conducted at a school in Sibu. The sample of the study consists of 161 Form 4 students. Questionnaire was being used as the research instrument in this study. The collected data from the questionnaire were then analyzed quantitatively by using Statistical Package for Social Science (SPSS). Cronbach Alpha' value more than 0.7 indicated that this questionnaire was reliable. The descriptive statistics frequency and Pearson's product-moment correlation were used to obtain the frequency, percentage, mean, standard deviation and the correlational coefficient of the independent and dependent variables. Result of this study indicated that self-concept of students ($p < 0.01$, $r = 0.609$) and school climate($p < 0.01$, $r = 0.431$) were found to have positive significant relationship with Form 4 students' Mathematics achievement while educational background of respondents' parents were found to have no significant relationship with Form 4 students' Mathematics achievement ($p = 0.17$, $r = 0.111$). Lastly, the findings were discussed based on the research objectives.

CHAPTER 1
INTRODUCTION

1.0 Introduction

The need for human being to perform well academically in today's modern society is greater than ever before since academic achievement particularly Mathematics achievement have become a means of assessing an individual's worth. Hence, the importance of having a strong foundation in Mathematics as a prerequisite for admission into institutions of higher learning in most disciplines is well recognized. This is because Mathematics is an essential instrument in developing scientific and technological knowledge. In Malaysia, the medium of teaching Mathematics in secondary schools was changed from the national language, Malay, to English in 2002. The change was made in view of the need to grasp mathematical understanding and learning in the lingua franca in preparing school children for their future in this borderless world.

However, some students still perform under average or perform poorly in Mathematics in spite of the high importance of Mathematical literacy. Recent studies have shown that students' achievements in Mathematics are influenced by several factors, particularly factors of self-concept, parents' educational background, and school climate (Shah, 1993; Elijio & Dudaitė, 2005; Tableman, 2004). Thus, this study is to verify if Form 4 students' achievements in

Mathematics will be influenced by the factors of self-concept, parents' educational background, and school climate.

This study was undertaken with the intention of providing more knowledge, skills and to make the school learner more mature to face the job market. Therefore the nature and factors related to students' Mathematics achievement should be understood in depth in order to tackle the problem caused by the factors effectively.

1.1 Background of the Study

There is a widespread interest in improving the levels of Mathematics achievement in schools. Apart from economic benefits, this also produces young people for the numeracy demands of modern workplaces and elevates the overall skill levels of the workforce. The interest in raising levels of Mathematics achievement has led to a focus on identifying the range of factors that shape Mathematics achievement as well as understanding how these factors operate to limit or enhance the achievement of different groups of students.

Achievement in Mathematics varies across nations, regions, and a variety of socio-economic and demographic characteristics. There are several factors affecting Mathematics achievement. For example, Hamacheck (1992) stated that some students do poorly in Mathematics because of low self-concept rather than low intelligent. In addition, a recent study by Lamb and Fullarton (2002) has shown that the Mathematics achievement in Australia was substantially influenced student background variables and school variables.

Low Mathematics achievement might be related to a student's self–perception of being unable to learn Mathematics concept. Thus, Hamacheck (1992) suggested that academic achievement may not be simply an expression of students' intelligence, but of students' perception of their intelligence, which when positive helps them feel confident and able, but when negative makes them

feel hesitant and uncertain. A study conducted by Wang (2007) has shown a causal relationship between self-concept and academic achievement. It is shown that students with high self-concept are likely to perform better in Mathematics than that of students with low self-concept. As such, this study is important because it inform emotionally important people such as parents and teachers to pay more attention in developing positive self-concept in youths (Hamacheck, 1992).

Parents play an important role in their children's learning. Aside from being actively involved in their children's education, parents also provide a home environment that can influence learning. Parents also serve as models for learning, determine the educational resources available in the home and hold particular attitudes as well as values towards education (Sanchez & Roda, 2008). Previous investigations in Iran has shown that there is a positive relationship between students' achievement in Mathematics and home background variables such as "parents' level of education", "number of books at home", and "possessing dictionary, computer and study desk" (Kiamanesh, 2002). However, Iranian students with well educated parents, educational aids, and more than 200 books at home score much lower than the international average score (Kiamanesh, 2002). Nevertheless, this study indicated that students who have positive perception towards Mathematics perform better in Mathematics (Kiamanesh, 2002).

School climate may be one of the most important ingredients of a successful instructional program. Without a well functioning school climate, a high degree of academic achievement is difficult ("Student Achievements", 2005). Bennett (2001) found that school climate has great influence on Mathematics achievement as students learn better when school climate is positive and the environment is good for learning.

Many factors have been said to influence learners' ability to learn Mathematics or to influence students' Mathematics achievement. At present, no factor is singled out as the strongest predictor that affecting students' Mathematics

achievement. Nonetheless, factors of self-concept, parents' educational level and school climate have be claimed to highly related to Mathematics achievement. As such, the three factors has been selected as the issue to be discussed in this study to examine contributions of student's self-concept, school and family factors on Form 4 students' Mathematics achievement. When the factors have been verified to have significant influence on the Mathematics achievement of students, only then can educator strive to design interventions to improve students' Mathematics achievement.

1.2 Problem Statement

Mathematics is very important in today's modern society because it is required for students to succeed in any other subject, such as chemistry, physics, accounting, and so on. It is compulsory for all secondary school students to pass Mathematics in order for them to pursue higher academic qualification (Curriculum Development Centre, 2004). Unfortunately, Mathematics is traditionally regarded as one of the most difficult academic subject and many students still perform poorly in Mathematics (Idris, 2006). Hishammudin (2005), education minister of Malaysia, stated that although most of the students passed Mathematics subject in Lower Secondary Assessment (PMR), there were still students who fail Mathematics at PMR level.

Some possible contributing factors are students' low self-concept, parents' education level and negative school climate. Some students may struggle with feeling of low self-concept that continually minimise their own ability and express doubt about their ability to succeed in Mathematics. Some parents with low education probably do not care about their children education. According to a new large-scale survey released by the Canadian Council on Learning, two of every three parents do not have the knowledge needed to help their children with homework ("Majority of Parents", 2006). Furthermore, some students may feel isolated or not being respected in school.

On the other hand, there are still shortages of studies that investigate factor affecting Mathematics achievement in Malaysia, particularly factors of

i) self-concept,
ii) parents' education level, and
iii) school climate.

Therefore, this study will discuss factors of self-concept, parents' educational background and school climate in order to find out to what extent Form 4 students' Mathematics achievement is influenced by the factors of self-concept, parents' educational background and school climate.

1.3 Objectives of the Study

1.3.1 General Objective:

The general objective of this study is to investigate the influences of students' self-concept, parents' educational level and school climate towards Form 4 students' Mathematics achievement.

1.3.2 Specific Objective:

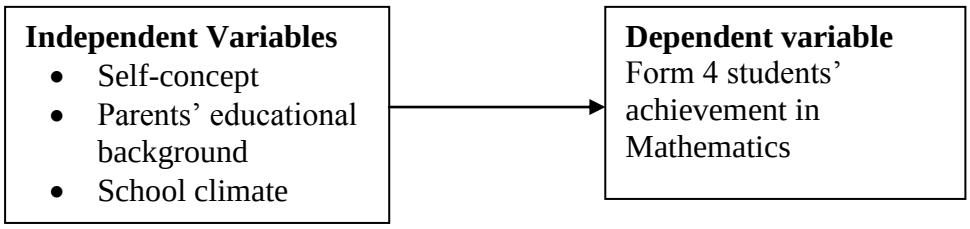
The Specific objective of this study is to determine the nature of relationship between Form 4 students' Mathematics achievement with factors of

i) self-concept,
ii) parents' education level, and
iii) school climate.

1.4 Conceptual Framework

This framework illustrates the relationship between Form 4 students' achievement in Mathematics with the factors of self-concept, parents' educational level and school climate. This framework will be used to develop questions and hypotheses for this study.

Figure1.1: Conceptual Framework



In figure 1.1, nature of relationship between an independent variable (self-concept) and the dependant variable (Form 4 students' achievement in Mathematics) is investigated in this study because many educators show that students with higher self-concept towards Mathematics may lead students to strive for better Mathematics achievement or vice versa (Byer, 2000).

Similarly, parents' educational background as an independent variable may also related to dependant variable (Form 4 students' achievement in Mathematics) as there are many saying that parents with higher education background will have higher socioeconomic status and higher expectation for their children that would lead to better Mathematics achievement of the students or vice versa (Jeup, 2009).

Lastly, school climate is used as an independent variable to investigate if there is relationship to the dependant variable (Form 4 students' achievement in Mathematics) because many educators show that with good facilities, good relationship between teachers and students, and safe from disruption probably would motivate students to learn better and thus perform better in Mathematics or vice versa (Walker, 2006).

1.5 Research Questions

The primary research questions are:

1) Are there any relationships between Form 4 students' achievement in Mathematics with factors of self-concept, education level of parents, and school climate?

2) To what extent does students' Mathematics achievement be influenced by each factor of self-concept, parents' educational level and school climate?

1.6 Research Hypothesis

Null hypothesis:

$H_0$1: There is no significant relationship between students' self-concept with Form 4 students' Mathematics achievement.

$H_0$2: There is no significant relationship between parents' educational background of students with Form 4 students' Mathematics.

$H_0$3: There is no significant relationship between school climate with Form 4 students' Mathematics achievement.

1.7 Significance of the Study

Mathematics achievement involves a complex interaction of factors that have specific direct and indirect effects through other factors on school outcome ("students achievement", 2005). Although the relationship between math achievement and factors such as self-concept, parents' educational background, and school climate has been studied widely, it is important to explore the factors that contribute to students' Mathematics achievement. This would help fill the

existing gap in the research carried out in this area. In addition, it could pave the way for more comprehensive research on the comparison of national and international research findings.

The findings of this study would provide better understanding into the factors that influence students' achievement in Mathematics. It may also helps the future students to have better insight into how those factors mentioned above affecting their students' achievement. Outcome from this study could also be used to help explain why some students perform better in Mathematics. It also provides broad insight into characteristics and factors that support better achievement in Mathematics.

Marsh (2003) stated how self-concept relate with achievement has important practical implications for educators. If higher students' self-concept leads to higher Mathematics achievement, then teachers might consider putting more effort in enhancing students' self-concept rather than fostering achievement.

The finding of this study will be useful for future teachers in planning curriculum instruction, as increasing students' self-concept will increase performance in a subject (Hamacheck, 1992). Furthermore, the finding of this study will provide useful information for Ministry of Education to encourage parents to enhance their knowledge. This would in future encourage parents to interact more with the children and also to improve their parenting skills in educating their children after realizing the importance of positive interaction with their children. It will also form a basis for suggestion and recommendation for school administrators to improve school climate by establishing the suitable learning environment for students as climate is a key indicator of good school (Ursula, 2006).

The purpose of the study is to create awareness among educators that each student's Mathematics achievement may have been affected by different factors. By identifying factors that affect students' Mathematics achievement, educators

can pinpoint their students' strength and weakness to improve students' Mathematics achievement.

1.8 Limitations of the Study

This study has five limitations due to the time and financial constraints. Firstly, the researcher did not possess adequate financial ability and time in conducting the study at every school in Malaysia. Therefore, the sample chosen will be small and restricted to 170 Form 4 students. Moreover, the research will be conducted at only one secondary school in Sibu, Sarawak. The findings of this result may only apply to this school and schools in this district; as such the findings made cannot be generalized for Malaysia and other foreign countries. Thus, the findings of this research might not truly reflect overall situation in all the Malaysian schools and schools in foreign countries.

Secondly, this research focused only on three factors; the factors are self-concept factor, parents' educational background factor, and school climate factor. This study did not take into account other possible factors that could influence the Mathematics' achievement such as age, language, cultural background, educators' competency in teaching, classroom factor the socio-economic status.

Thirdly, this research uses only questionnaire to collect data. The use of questionnaire to collect data does not probe deeply into the three factors where Mathematics is concerned. Therefore, the data collected on the relationship would only be limited to that represented by the items used in the questionnaire. Other methods, such as interview and observation are being not used in this study to validate the findings; the reason is probably because of the school does not allow researcher to disturb the daily learning and teaching process.

Fourthly, data collected from respondents are subjected to bias. As such, finding of questionnaire might be compromised if the respondents are reluctant to answer the questionnaire truthfully. Students tend to choose responses that they

thought their teacher would like to hear. In addition, some respondents may be emotionally influenced before answering questionnaire.

Lastly, the Mathematics achievement in this study is limited only to PMR result while other standardized Mathematics test like SPM, STPM and many others are not being used to measure students' Mathematics achievement level.

1.9 Conceptual Definition and Operational Definition

1.9.1 Mathematics Achievement

The conceptual definition of Mathematics achievement is referred to what students have learned from formal instruction, usually in school. It includes all the formal tests that students take in school that are intended to assess their achievement (Airasia, 2005).

The operational definition of Mathematics achievement is Mathematics grade in PMR result. For the purpose of this research, students who received grade A or grade B in Mathematics subject are categorised as high achiever, students who received grade C in Mathematics subject are categorised as average achiever and students who received grade D, grade E and grade F in Mathematics subject are categorised as low achiever.

1.9.2 Self-Concept

The conceptual definition of self-concept is "what do you understand about yourself towards Mathematics. For example, self-concept factor includes items related to whether the student thinks he will never really understand math, he is not talented in Mathematics, Mathematics is not one of his strength, and Mathematics is more difficult for him than for many of his classmates" (Kiamanesh, 2002).

The operational definition of self-concept is ‘academic self-concept’. ‘Academic self-concept’ is one of the multidimensional construct of self-concept. The term ‘academic self-concept’ here is referred to students’ academic confidence and students’ academic effort towards Mathematics. Joyce and Yates (2007) pointed out “the academic confidence subscale assessed students’ feelings and perceptions about their academic competence while the academic effort subscale assessed students’ commitment to and involvement and interest in schoolwork.”

1.9.3 Parents’ Educational Background

The conceptual definition of parents’ educational background is the educational attainment of a student’s parents (Kiamanesh, 2002) while the operational definition of parents’ educational background is referred to the highest education level of students’ parents.

1.9.4 School Climate

The conceptual definition of school climate is defined as characteristics of schools, such as the physical structure of a school building and the interactions between students and teachers. School climate factor including items related to school environment to determine whether the student had something stolen, truanting, and thought he might have gotten hurt and whether the student’s friends skipped the class, had something stolen, and got hurt (Kiamanesh, 2002).

The operational definition of school climate is defined as social and physical environment as well as school safety. According to Monrad et al. (2008), “Social-physical environment is with items relating to building cleanliness and maintenance” and “the safety factor is the perception of security both at school and coming to and going from school.”